GO solar CALIFORNIA

New Home Builder Information Guide

California Energy Commission's New Solar Homes Partnership

California's Incentive Program for New Residential Energy Efficient Solar Home Construction

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About the New Home Builder Information Guide

Why This Guide Has Been Created

The California Energy Commission's New Solar Homes Partnership (NSHP) provides California builders with the tools they need to help build and create a self-sustaining market for new energy efficient solar homes in California and market them to consumers. As part of this effort, the Energy Commission created this New Home Builder Information Guide to provide builders, developers and installers with an understanding of what the NSHP program is, how it works, and to provide access to the resources they need to Go Solar.

Who Should Use This Guide

The New Home Builder Information Guide is intended for builders, developers and installers, and is tailored to be used as a guide and resource for those interested in building new energy efficient solar homes. This guide is updated regularly and available on the GoSolarCalifornia.org website and at various builder events throughout the state.

Inside the Guide

The New Home Builder Information Guide provides a step-by-step look at the application process and offers a variety of resources to help builders understand the incentives available for building new energy efficient solar homes in California. Builders will also find details about the financial incentives and marketing support services available by enrolling in the NSHP and bringing new energy efficient solar homes to market.

This Guide contains an array of information to help builders understand the demand for energy efficient solar homes to help them get started building. These items include background information on the NSHP, market research findings demonstrating buyer demand for solar homes, case studies from builders of energy efficient solar homes, testimonials from solar homeowners, recent articles, resources and contact information.

About the New Solar Homes Partnership

Launched in January 2007, the NSHP is a component of the California Solar Initiative, signed into law in 2006 under Senate Bill 1 (Murray) to implement Governor Schwarzenegger's $3.3 billion, Million Solar Roofs Program.

The NSHP provides financial incentives and marketing support to home builders, encouraging the construction of new, energy efficient solar homes that save homeowners money on their electric bills and helps protect the environment. The goals of the NSHP are to create a self-sustaining market for solar homes and gain builder commitment to install solar energy systems on new homes as a standard feature for the home buyer. A new home that qualifies for the New Solar Homes Partnership is at least 15 percent more efficient than the current building standards. The overall goal of the NSHP is to achieve 400 megawatts of new solar-produced electricity by the end of 2016.

About the California Solar Initiative

As part of California's efforts to increase renewable energy, Governor Schwarzenegger signed Senate Bill 1 (SB1), the Million Solar Roofs Plan, in 2006. Now known as the California Solar Initiative (CSI), SB1 established three goals: (1) to install 3,000 megawatts (MW), or approximately one million solar roofs, of distributed solar PV capacity in California by the end of 2016; (2) to establish a self-sufficient solar industry in which solar energy systems are a viable mainstream option in 10 years; and, (3) to place solar energy systems on 50 percent of new homes in 13 years.

This effort is a bold step forward in moving the state toward a cleaner energy future and lowering the cost of solar energy systems for consumers.

Go Solar California is part of the CSI and builds on 10 years of state solar rebates offered to customers in California's investor-owned utility territories: Pacific Gas & Electric (PG&E), Southern California Edison (SCE), and San Diego Gas & Electric (SDG&E).

The CSI statewide budget is $3.3 billion over 10 years, distributed between three distinct program components: the California Solar Initiative ($2.166 billion/1940 MW); the New Solar Homes Partnership ($400 million/360 MW); and the Publicly Owned Utility Programs ($700 million/700 MW).

With a ten year commitment for solar incentives, and under legislative direction, California aims to build a self-sustaining solar industry with lower overall costs to consumers.

About the California Energy Commission

Created by the Legislature in 1974, the California Energy Commission is the state's primary energy policy and planning agency. The Energy Commission has six major responsibilities: forecasting future energy needs and keeping historical energy data; licensing thermal power plants 50 MW or larger; promoting energy-efficiency through appliance and building standards; developing energy technologies and supporting renewable energy; conducting research, development and commercialization programs for new energy technologies; and planning for (and directing) State response to an energy emergency.

About the NSHP Home Builder Outreach Program

The NSHP's Builder Outreach Program was established by the Energy Commission to increase new solar home construction in California and to help home builders navigate the process of going solar in the Golden State.

Under the program, NSHP builder partners have access to a variety of marketing tools that are designed to enhance their existing outreach efforts and further educate homebuyers about the many advantages of owning a new energy efficient solar home.

NSHP builder partner marketing benefits can include, but are not limited to:

- Marketing support to drive home sales
- Access to current research that supports new energy efficient solar home construction
- Web-based promotion on GoSolarCalifornia.org
- Inclusion in NSHP collateral materials

Partner with the New Solar Homes Partnership

Become a Building Partner in the New Solar Homes Partnership

The California Energy Commission is pleased to welcome leading environmentally-minded home builders that integrate solar photovoltaic (PV) systems and high energy efficiency standards throughout their developments as partners in the NSHP.

Partnership Participation Levels and Promotional Support

In addition to rebates, the Energy Commission is offering promotional support to production home builders that partner with the New Solar Homes Partnership (NSHP) campaign. There are four levels of partnership benefits available: Platinum, Gold, Silver and Bronze. As the marketing support chart shows, Platinum-level partners are builders that feature solar as a standard feature throughout their development and exceed energy efficiency standards by 35 percent (Tier 2) or more. Platinum partners receive the highest level of marketing support from the NSHP campaign.

Eligibility Requirements for NSHP Campaign Marketing Support

To qualify as a partner in the NSHP, builders must meet these seven basic requirements:

1. Ensure the location of the development will receive electric service from an eligible investor-owned utility — Pacific Gas & Electric (PG&E), Southern California Edison (SCE), San Diego Gas & Electric (SDG&E) or Bear Valley Electric (BVE). If your development is in another electric utility's region, please visit **www.GoSolarCalifornia.org/builders** for additional information.
2. Exceed Title 24 Building Energy Efficiency Standards by either 15 percent (Tier 1) or 35 percent (Tier 2).
3. Order or download the NSHP Guidebook from the Energy Commission for eligibility requirements and program information that allows you to apply for a reservation and a claim rebate.
4. Contact your local investor-owned utility for details on submitting and mailing your completed NSHP application for review.
5. Submit your completed NSHP application to your investor-owned utility.
6. Once your completed NSHP application has been approved by the investor-owned utility, refer to the Builder Outreach Kit Marketing Support Benefits table for specific eligibility requirements on how to become a Platinum, Gold, Silver or Bronze builder.
   www.GoSolarCalifornia.org/builders/marketing_resources/index.html
7. To begin the process of promoting your NSHP development and benefiting from the available marketing benefits listed below in the table, contact the Energy Commission's Renewable Energy Office at 1-800-555-7794 or by e-mail to **renewable@energy.state.ca.us.**

California Sun Certified
ENERGY EFFICIENT HOME

NSHP builder partners have the opportunity to co-brand their homes as a California Sun Certified Energy Efficient Home by the California Energy Commission.

California Sun Certified logo

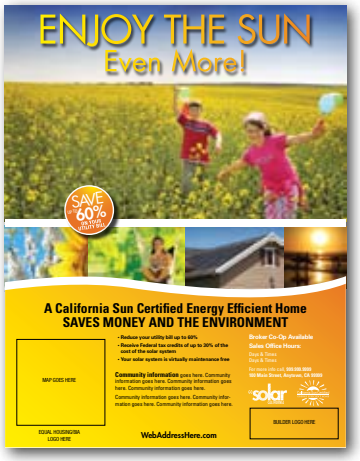
New Home Builder Advertising Tool Kit

The advertising tool kit provides a variety of pre-designed advertising, from newspaper ads, internet banner ads, micro-website home pages, and e-blast designs to help you get your message to the consumer faster. It is intended to be used as a tool for the marketing teams of builders and developers to promote your NSHP energy efficient solar home community. This guide is also available on the Go Solar California website so your advertising agency, designers, or other vendor can access it.

The Concepts

Illustrative: This concept is whimsical, fun and targeted toward a younger audience. It uses colorful illustrations of homes plugging directly into the sun.

Natural: This concept uses product shots of your home in direct relation to nature. The nature images are larger-than-life to convey the importance of the environment. This is intended for an older target audience as headlines directly associate interest in saving money while they help the environment.



Relationship: This concept focuses on lifestyle first and the home and technology second. The design of the ads allows you to replace the lifestyle images with ones that most closely match your marketplace and target audience demographic profile.

Scientific: This concept is geared toward an older demographic who is interested in the technological aspects and savings of solar. It uses product photography with highlights of solar technology.

Solar Is SMART

Solar Is WORKING

Marketing Support Benefits Available for Production Home Builders

New Solar Homes Partnership for Production Home Builders	*Bronze*	*Silver*	*Gold*	*Platinum*
Energy Efficiency above Title 24 Requirements:*	Tier 1	Tier 1	Tier 2	Tier 2
Energy efficiency 15%+	√	√		
Energy efficiency 35%+			√	√
Solar PV System Offerings:*				
Solar offered as an option only in the development	√			
Solar as standard in less than 50% of homes in the development		√		
Solar as standard in more than 50% of homes in the development			√	
Solar featured as standard in 100% of the homes in the development				√
Campaign Support:**				
Assistance in training sales personnel about the benefits of solar	√	√	√	√
Standard NSHP language in press releases about new solar communities		√	√	√
Listed as solar-friendly community and featured on an interactive map of solar home communities on **GoSolarCalifornia.org**		√	√	√
Featured in consumer brochure with location of development			√	√
Tailored California Energy Commission quote in builder press releases				√
Featured on a rotating basis on NSHP website banner				√

Updated December 2009

* Refer to California Energy Commission NSHP Guidebook for definitions.
** Campaign support is available upon approval of individual NSHP applications and subject to available Energy Commission resources.

For more information about marketing support available to NSHP home builders, please contact renewable@energy.state.ca.us.

Become a Building Partner in the New Solar Homes Partnership

The California Energy Commission's New Solar Homes Partnership (NSHP) encourages home builders to take advantage of the incentives offered to builders who integrate high energy efficiency and solar photovoltaic (PV) systems in new residential buildings in California. This step-by-step guide will help get you started.

How To Apply

STEP 1 – Gather Resources

Download the NSHP guidebook that is available on the California Energy Commission's Go Solar California website at **www.GoSolarCalifornia.org/documents/index.html.**

Note: Only new homes built within Pacific Gas and Electric, Southern California Edison, San Diego Gas and Electric and Golden State Water Company (doing business as Bear Valley Electric Service) service areas are eligible for incentives under the NSHP. Consult the NSHP Guidebook to ensure that you meet all of the eligibility requirements before proceeding.

Select a Certified Energy Plans Examiner (CEPE) who is certified by the California Association of Building Energy Consultants (CABEC) to complete Title 24 Building Energy Efficiency Standards compliance analysis and energy efficiency documentation for the NSHP and your utility's new construction energy efficiency programs. A certified energy planner can save you time and money in working with your local utility and the state.

Select a renewable energy retailer. A list of registered retailers and installers is available online at **www.GoSolarCalifornia.ca.gov/retailers/search-new.php.**

STEP 2 – Select PV Equipment and Service Providers

Select eligible equipment (PV modules, inverter and meter) to purchase for each home. A list of eligible equipment is available online at: **www.GoSolarCalifornia.org/equipment.**
You will also have to choose a licensed contractor who will install the system(s). Contractors must have an active A, B, C-10 or C-46 license. Many providers also supply the equipment. A list of PV retailers is available at: **www.GoSolarCalifornia.ca.gov/retailers/search-new.php .**

STEP 3 – Download New Solar Homes Partnership Reservation Application and Apply Online

To secure a rebate, builders may place a reservation in the NSHP as much as 36 months in advance of project completion, depending on the level of commitment to solar. Projects offering solar as an option will receive an 18-month reservation. Those offering solar as a standard feature are eligible for a 36-month reservation period.

Download and complete the Reservation Application Form NSHP-1 that is included in the NSHP Guidebook. The application is available online at: **www.GoSolarCalifornia.org/documents.** Be sure to include all the required supporting documents with your application.

STEP 4 – Incentives from Your Utility

You may be eligible for additional incentives from your local investor owned utilities. Contact your utility's New Construction Energy Efficiency Program to understand the incentives that they offer and program requirements. Expect to complete a separate program application and provide the CF-1R at the time of application.

Pacific Gas and Electric
New Solar Homes Partnership Performance Method
www.pge.com/mybusiness/energysavingsrebates/incentivesbyindustry/newconstruction/rncnshp/index.shtml

Southern California Edison
California New Homes Program
www.sce.com/b-rs/bb/cali-new-homes/

San Diego Gas and Electric
Advanced Home Program
www.sdge.com/construction/newHomes.shtml

Bear Valley Electric
www.bves.com

STEP 5 – Submit the Reservation Application

To ensure your application is complete, make sure it conforms to the instructions and directions in the NSHP Reservation Application Checklist, available online at:
www.GoSolarCalifornia.org/documents/APPLICATION_CHECKLIST.PDF.
Incomplete applications will result in delayed approvals.

Contact your local investor owned utility for details on mailing your NSHP application.

Pacific Gas & Electric: 1-877-743-4112
Southern California Edison: 1-866-584-7436
San Diego Gas & Electric: 1-866-631-1744
Bear Valley Electric: 1-800-808-2837 ext. 186

STEP 6 – Application Review

Your application will be reviewed for eligibility and you will receive an approval form (NSHP-2 or NSHP-1.6) when your application for a reservation has been approved.

System installations eligible for the base incentive must be completed within 18 months from the date your reservation is approved.

Systems installed in developments that offer solar as a standard feature, and affordable housing projects, must be completed within 36 months of the approval date. When applicable, be aware of checkpoint requirements. See the NSHP Guidebook for additional information.

STEP 7 – HERS Rating

Contact an approved Home Energy Rating System (HERS) provider to arrange for field verification of your development by a certified HERS Rater. More information on HERS is available online at: **www.energy.ca.gov/HERS.**

When arranging for the energy efficiency field verification, be sure to follow your utility's New Construction Program requirements. It is recommended that builders who are not going through the utility New Construction Program, or are going through both programs, complete an NSHP plan-check and therefore follow the NSHP requirements.

If you wish to use the same HERS Provider and HERS Rater for field verification for each photovoltaic (PV) system, provide the CF-1R (Certificate of Compliance: Residential) for the energy efficiency measures and the CF-1R-PV for the PV to the HERS Provider's data registry as specified by the HERS Provider. Once you have selected your HERS Rater for the energy efficiency and PV field verification, this information should be provided to your NSHP program administrator.

STEP 8 – PV Installation

Energy Efficiency measures and photovoltaic (PV) systems must be installed consistent with the CF-1R (Certified Energy Plan Examiner form) and the CF-1R-PV (Expected Performance Base Incentive calculations form).

If there are any changes to the energy efficiency measures that are not consistent with the CF-1R form, notify the utility provider's **New Construction Energy Efficiency Program representative** at the time of the change to obtain approval. Builders not going through the utility New Construction Program only need to notify the NSHP Program Administrator. Builders going through both programs who completed a separate plan-check prior to the start of the project will also need to obtain approval from the NSHP program administrator

Changes to either the energy efficiency measures or the PV system installation must be documented in a revised CF-1R or CF-1R-PV form. Revised documentation must be submitted to the utility provider's **New Construction Energy Efficiency Program** and provided to the NSHP program administrator for inclusion in the HERS Provider's data registry.

Make sure that the installer(s) completes the CF-6R form for the energy efficiency measures for each home, including diagnostic testing if necessary, and the CF-6R-PV form for each PV system, making all needed system checks. Provide copies of each CF-6R and CF-6R-PV to the HERS Rater at the time of the field verifications.

The builder must provide to both the installer and the HERS Rater a site plan that: a) identifies the species of all pre-existing, planted and planned trees and the location and height of any structures which will be built on the lot and neighboring lots of the building with the solar system; and b) shows the bearing of the property lines, the azimuth, and tilt or roof pitch of each PV array.

STEP 9 – HERS Verification

A HERS Rater must verify the installed energy efficiency measures and each PV system once it is installed, permitted and operational. The HERS Rater will complete the diagnostic testing and field verification for each of the energy efficiency measures needed to meet Tier I or Tier II levels and completes the CF-4R form. The HERS Rater will also complete the field verification of each PV system and complete the CF-4R-PV form. Both the CF-4R and the CF-4R-PV forms must be generated through the HERS Provider's data registry. If the CF-4R or CF-4R-PV forms indicate that the actual energy efficiency measures or the actual PV installation is inconsistent with the CF-1R or the CF-1R-PV, either the installation must be changed to correct the problem or the CF-1R or the CF-1R-PV must be changed to match the actual installations, continuing to meet the energy efficiency Tier levels and revising the PV system rebate calculation.

STEP 10 – Submit your Rebate Claim

Rebate claim processing can also be done online at **www.newsolarhomes.org.** The general process is: Review the checklist on the Payment Claim Form for required supporting documents. Make sure that the final rebate calculations on the CF-1R-PV are consistent with the final CF-4R-PV for each PV system. Complete and mail your rebate payment claim form NSHP-2 with all supporting documents to your utility.

Contact your local investor owned utility for details on mailing your NSHP application.

Pacific Gas & Electric: 1-877-743-4112
Southern California Edison: 1-866-584-7436
San Diego Gas & Electric: 1-866-631-1744
Bear Valley Electric: 1-800-808-2837 ext. 186

Lower Your Costs

A variety of incentives and tax credits are available to lower the costs of adding energy efficiency measures and photovoltaic system equipment in new home construction.

Incentives for PV Installations

As a builder in the California Energy Commission's New Solar Homes Partnership (NSHP) there are two incentive levels available for installing PVs on residential buildings. The NSHP provides an Expected Performance Based Incentive (EPBI) using a specific dollars-per-watt amount applied to the Energy Commission-specified reference solar energy system. The incentive amount for each applicant solar energy system is determined by analysis using the PV Calculator, and is paid when the solar system has been installed, approved by the local building authority, and all program requirements have been met. Detailed information on how the incentive amount is determined can be found in the NSHP Guidebook.

Incentives will decline over the life of the program with the program's application process closing no later than the end of 2016. Incentive levels and reserved volume are subject to funding availability.

Production Homes with Solar as a Standard

The EPBI amount is based on the reference system receiving $2.60 per watt at the initial step. To qualify, the builder must commit at the reservation stage that a minimum of 50 percent of the homes/dwelling units in the subdivision or multifamily housing development with six or more homes/dwelling units will have solar systems that meet or exceed the California Flexible Installation criteria. Projects qualifying for this incentive will receive a 36-month reservation period.

Base Incentive

The EPBI amount is based on the reference system receiving $2.50 per watt at the initial step. The base incentive applies to custom homes, small developments, reservations where solar is identified as an option, producing housing where solar will not be installed as a standard feature, as defined below, and common areas of residential developments. Projects qualifying for the base incentive will receive an 18-month reservation period.

The actual incentive amount for a particular system and installation depends on the EPBI calculation of the system's expected performance compared to the reference system. Incentive levels will decline when a specific cumulative megawatt volume of reservations, in terms of total-program capacity, has been reached.

NSHP PV Calculator

www.GoSolarCalifornia.org/nshpcalculator/index.html

- $2.60 per watt for production homes with solar as a standard feature
- $2.50 per watt for all other homes

Note: Affordable housing new construction receives a rebate of $3.50 per watt for residential units and $3.30 per watt for common areas.

Refer to the NSHP Guidebook for detailed information and qualifications at:
www.GoSolarCalifornia.org/documents

Utility Provider New Home Construction Programs

Additional energy efficiency incentives are available through various utilities' New Construction Energy Efficiency Programs. To determine the level of incentives that the utility offers for energy efficiency and information on their program requirements, see the specific utility below.

Pacific Gas and Electric
New Solar Homes Partnership Performance Method

www.pge.com/mybusiness/energysavingsrebates/incentivesbyindustry/newconstruction/rncnshp/index.shtml

Southern California Edison
California New Homes Program

www.sce.com/b-rs/bb/cali-new-homes/

San Diego Gas and Electric
Advanced Home Program

www.sdge.com/construction/newHomes.shtml

Bear Valley Electric

www.bves.com

Federal Tax Credits

Solar Energy (Consumer or Builder)

In October 2008, the President signed the Emergency Economic Stabilization Act of 2008 which extended the 30 percent Residential Solar Investment Tax Credit (ITC) for the installation of photovoltaic (PV) systems on residential properties for eight years through December 31, 2016. It also removes the cap on qualified solar electric property expenditures (currently $2,000). The credit is available for PV systems placed in service after December 31, 2008. This credit can be retained by the builder or passed on to the home buyer. More information is available online at: **www.irs.gov.**

Market Research

Energy Efficient Solar Homes – The Wave of the Future, Grounded in Research

The California Energy Commission's New Solar Homes Partnership (NSHP) commissioned studies of the California housing market to gauge both buyer knowledge and demand for roof-top solar electric systems in new homes throughout the state. A series of six focus groups and statewide telephone surveys of recent and prospective new home buyers were conducted. From 2007 to 2009 consumer support for the inclusion of solar systems on new homes has been consistently strong, as well as their favorable opinion of builders who incorporate solar in their new home communities.*

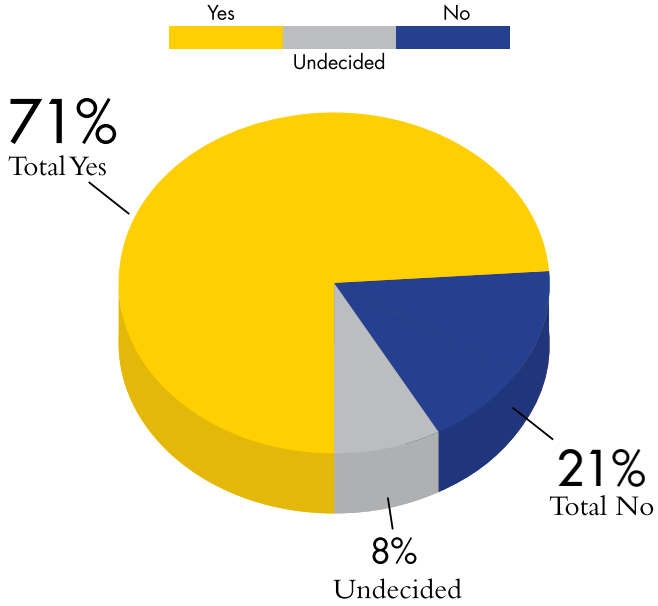
Key Findings to Support Energy Efficient Solar Homes

Consumers Want Solar

- 87 percent of Californians view a home's energy efficiency as an important factor when considering the purchase of a new home.

- 70 percent said that the cost of the monthly electricity bill was an important factor in their decision to buy a new home.

"Based on what you know today, do you think that home builders should make roof-top solar electric systems a standard feature in all new single residence homes they build?"

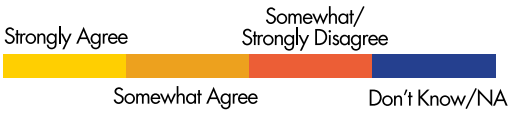


*The NSHP market research was conducted by an independent contractor, Fairbank, Maslin, Maullin & Associates, from March to May, 2007, and in June and November, 2008 and October, 2009. The research included is from the October, 2009 statewide telephone survey.

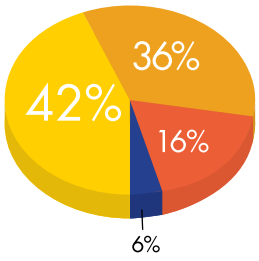
What Consumers Think About Solar Home Builders

- 78 percent of home buyers in California perceive a homebuilder who builds homes with solar electric systems as a green builder who cares about the environment.

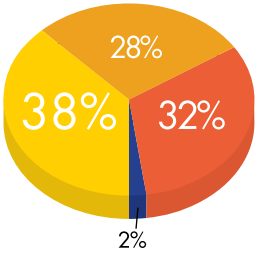
- 67 percent equate a home builder who offers solar electric power as one who offers high quality construction throughout the home.



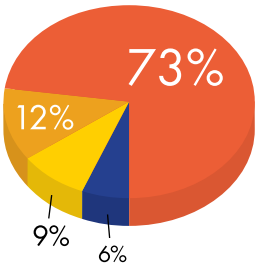
A home builder who builds homes with solar electric systems is a green builder who cares about the environment.



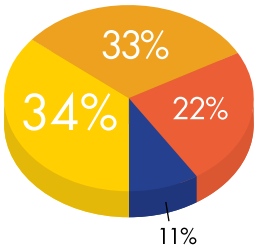
The high cost of electricity has now become an important factor in my home buying decision.

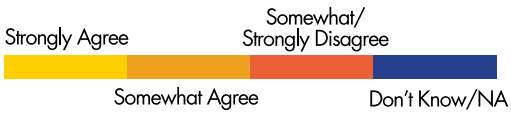


A solar electric system is just an expensive gimmick to get home buyers to pay more for a home.



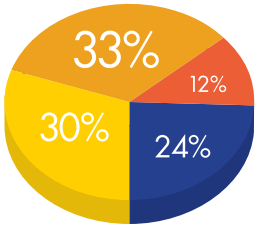
A home builder offering solar electric power as an option is most likely to be offering high quality construction throughout the home.



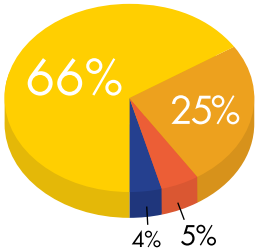


> To me [solar] says the builder is environmentally conscious, and buying a home makes a statement that I am actually thinking about the environment when using solar power.
>
> – Female Homebuyer, Riverside

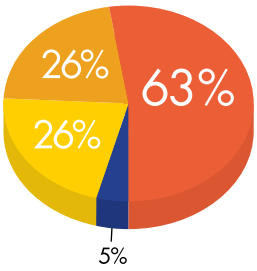
With a solar electric system on your house, you can reduce your utility bill up to 60 percent.



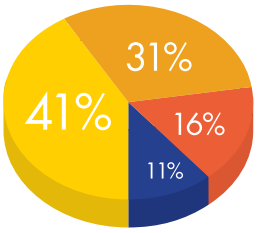
Electric bills will continue to increase steadily in the years ahead.



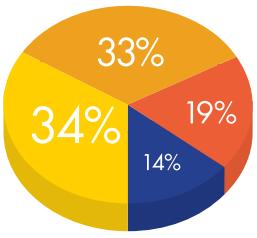
Using a solar electric system for your house helps the natural environment.



Having a solar electric system lets a home owner start saving on monthly living costs immediately.



With housing prices down, solar electric systems are now more affordable to include in a new home's purchase price.



Home Builder Case Studies

Olson Homes

Project

Depot Walk - Orange, CA

Just two short blocks from all the charm and excitement of Old Towne Orange, Depot Walk offers a dynamic and convenient location. The community is next door to the Orange Metrolink station and is conveniently located amongst rows of antique shops, galleries, restaurants and nightlife.

Depot Walk's spacious, contemporary, three-story California Brownstones and live/work loft spaces feature 1,277 to 2,010 square feet of living space with a host of designer amenities including private decks and attached 2-car garages. The homes were priced from the high-$400s.

The U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) silver-rated community showcases a number of sustainable features including rooftop solar panels that provide up to 50 percent of the homes electricity needs, tankless water heaters, dual flush toilets, Energy Star appliances, renewable building materials, low emissions paint, drought-resistant landscaping, limited use of turf, satellite-controlled irrigation systems and permeable concrete for parking and walkways.

Making the Decision

At a time when energy and fuel costs were skyrocketing in California, and films like Al Gore's "An Inconvenient Truth" were informing Americans about the dangers of global warming, **The Olson Company saw a need in the market for a community that could offer homebuyers a way to help reduce their own carbon foot print.**

"For more than 20 years The Olson Company has built the majority of our communities in downtown and urban corridors," said Bill Holford, vice president of sales and marketing for The Olson Company. "But with Depot Walk we wanted to take things to the next level."

Not only was the community an infill project located next to a Metrolink station in Old Town Orange, but **the company decided to obtain a silver level LEED certification for the project.** In addition to standard rooftop solar panels, all the homes were built with a number of sustainable building products and practices.

"We felt it was the right thing to do," said Holford of the plan to build LEED certified solar homes.

Challenge

"Although consumers had become more environmentally conscience, we still needed to do a good amount of education around the different green features of the homes and what LEED certification really means," said Holford.

According to Holford, many buyers understood the basic concept of solar, but still needed to understand the cost savings it presented. **"Our buyers are able to see savings of about 50 percent on their utility bills," said Holford. "With the cost of the system included in the price of the home, that's a savings they can realize right away."**

Olson Homes

> It became a badge of honor for our buyers to show off their solar systems and the other sustainable features of their homes.
>
> – Bill Holford, Vice President of Sales and Marketing, The Olson Company

Solution

Olson worked closely with SunPower to educate their buyers about the benefits of solar and how it can help them save on their monthly utility bills.

Once buyers understood all the benefits and money saving features of the homes, "it became a badge of honor for them to show off their solar systems and the other sustainable features of their homes," said Holford.

Performance Results

Depot Walk received praise from local and national media, including a Builder's Choice Grand Award from *Builder* magazine as a sustainable/green project. That media attention helped educate buyers and raise awareness for the community. "We definitely saw higher traffic numbers at Depot Walk than we have at other communities," said Holford.

Depot Walk sold out in the summer of 2008 and continues to be a model for future projects. The company recently opened Village Walk in San Lorenzo and plans to keep sustainable and solar building practices top of mind for future projects.

The Olson Company

Established in 1988, The Olson Company is nationally recognized for creating unique in-town neighborhoods in urban communities throughout California. Headquartered in Seal Beach, California, The Olson Company has successfully partnered with governmental agencies and private landowners to create innovative housing solutions designed to fulfill the lifestyle needs of today's buyer. The company works diligently with community and neighborhood groups to build a high level of awareness and broad-range community consensus around its neighborhoods. **The Olson Company was awarded the prestigious "Builder of the Year" award by *Professional Builder* magazine and the National Association of Home Builders.**

specifications

City: Orange, CA
# of Solar Homes: 32
Solar Provider: SunPower
Utility: Southern California Edison (SCE)
Average System Size: 2.5 kW
Annual Energy Production: Estimated 3,553 kWh for PowerGuard systems
Module Type: SunPower 225's PowerGuard and Modules
Inverter: SunPower - SPRx2800

Centerstone Communities

Project

Harmony at Centerstone - Fontana, CA

Harmony at Centerstone consists of 56 homes that radiate warmth and intimacy. The community is located conveniently near the award-winning Etiwanda schools, shopping, and work centers. With homes ranging in size from 2,223 to 3,378 square feet, Harmony offers homebuyers – from first-time, to empty-nesters – a wide selection of innovative floor plans, built with energy savings to help save energy dollars and green technologies to improve the quality of life.

Harmony offers an array of floor plan choices featuring up to six-car garage options and first-floor "in-law" suites ideal for aging parents or young adults still living at home. Each home comes standard with a 2.5kW solar system as well as a number of energy and water savings features including radiant roof barriers, double-paned low-E windows, mastic adhesive sealed ducts, Weather Smart irrigation controllers for the landscaping, energy saving lighting throughout and energy efficient night set back thermostats. The homes are priced from the high-$300s to the mid-$400s.

Making the Decision

As a relatively new player in today's competitive homebuilding market, Centerstone was acutely aware of the increasing popularity of solar panels within the building community. The company was well-educated about the technology, the data that supported it and how successful solar had been for other builders in Northern California. "We really just felt it was time," said Hal Woods, president of Centerstone Communities. "We had been keeping a close eye on our competitors in the Northern California who really led the solar movement, and wanted to bring those same benefits to our buyers in Southern California," he explains.

In light of the success Centerstone has already had with Harmony, the builder plans to continue leveraging solar in future projects. **"We plan to offer solar at least as an option on all our new communities moving forward," said Woods. "It's the right thing to do."**

Centerstone chose Peterson-Dean as its solar provider for Harmony. "Peterson-Dean was really great to work with, they handled most of the paperwork and worked with our team to help facilitate the process," said Woods.

Challenge

One small challenge Centerstone faced was educating their local building department about the plan checking process for building solar homes, though in the end the builder experienced no significant road blocks throughout the process. The real challenge was simply the tough housing market. "It took a while for word to spread about this community," said Woods. There was also a flood of builders trying to unload standing inventory, making for a competitive market in the Inland Empire. "We didn't want to give these homes away, so we had to wait it out while our competitors tried to move their inventory," said Woods.

Centerstone Communities

> We plan to offer solar at least as an option on all our new communities moving forward. It's the right thing to do.
>
> – Hal Woods, President of Centerstone Communities

Solution

Before long, word did spread about Harmony and its many environmental benefits. "We're the greenest community I know of in San Bernardino County," said Woods.

Performance Results

During the late Spring and early Summer months of 2009, Centerstone saw approximately 100 people come through its models on a weekly basis, compared to less than 25 a few months prior. The community is already 50 percent sold and is anticipated to sell out by year's end.

Woods attributes this uptick to the beginning of the housing turnaround along with the $10,000 state tax credit for buying new construction and federal tax credits for first-time buyers and for solar installations which really helped push people who were on the fence about buying a home.

Centerstone Communities

Centerstone Communities, Inc. is a real estate development company. **Centerstone's principals, with its key management team, represents over 100 years in the home building industry.** Headquartered in Santa Ana, California, Centerstone has built residential communities throughout Southern California and Nevada. For the past 15 years, Centerstone has developed in such fine communities as Artesia, Buena Park, Cerritos, Carlsbad, Cypress, Huntington Beach, Las Vegas, Nevada, Newport Beach, Santa Ana and Westminster. Current development projects for the coming year are located in Beaumont, Cerritos, Cypress, Fontana and Highland.

specifications

City: Fontana, CA
# of Solar Homes: 56
Solar Provider: Peterson Dean Solar, Inc.
Utility: Southern California Edison (SCE)
Average System Size: 2.31 kW
Annual Energy Production: Estimated 3,409 kWh per home
Module Type: Suntech 34W panel
Inverter: PV Powered 2500

Treasure Homes

Project

Fallen Leaf at Riverbend - Sacramento, CA

Built by Treasure Homes of Roseville, Fallen Leaf at Riverbend is a Zero Energy* Sacramento Municipal Utility District (SMUD) community, and the first solar community to be built within the Sacramento city limits. In addition to solar power, the homes in this community include many other energy saving components as standard features and are located close to downtown, adding to Fallen Leaf's environmentally friendly stature by reducing the daily commute for its residents.

Fallen Leaf at Riverbend includes 32 Zero Energy homes, with four floor plans ranging in size from 1,026 to 2,271 square feet of living space. The community features private motor courts and professionally maintained landscaping, including the residents' front yards.

Making the Decision

Jim Bayless, president of Treasure Homes, was intrigued by the idea that the homes he built could produce as much energy as they would consume. He decided to build a solar community after answering a few basic questions such as: How much will it cost? Who does the work? What's the warranty? How will my sub-contractors work together?

"These questions were answered to my satisfaction rather quickly by SMUD, Consol and BP Solar," comments Mr. Bayless. "And from there it was a natural step to add increased energy efficiency components and become a Zero Energy community and a certified California Green Builder."

There were no other solar communities in the market at the time, so Mr. Bayless decided to move forward and looked to solar as a point of differentiation for his community.

Challenge

According to Mr. Bayless, the solar technology wasn't an issue. The sub-contractors worked well together and he was confident in the warranties. His city inspections took longer than usual because staff was not yet experienced with solar permitting; however, being the first solar community in Sacramento, this was an understandable issue.

Mr. Bayless' biggest challenge was educating the consumer on the benefits of a Zero Energy community. "I underestimated the challenge in educating people about the benefits of solar," he notes. "Of course, we were the first out in the market and we were a very small infill community. **Since our debut, there has been a cultural shift in the awareness of the benefits of solar and energy efficient homes.** Now I simply can't turn on the TV or open the paper without hearing or reading something about solar. This has really helped us close out the community on a strong note."

* Treasure Homes is part of the SMUD Zero Energy Home program. The program offers homes that feature the latest in energy efficient equipment, tighter building standards, and roof-integrated solar systems to generate electricity. The Zero Energy Home program formed the foundation for the New Solar Homes Partnership.

Treasure Homes

> It was a wonderful experience and so satisfying to know that our goal for this community was achieved as evidenced by happy homeowners.
>
> – Jim Bayless, President of Treasure Homes

Solution

Unlike the solar panels of 20 years ago, Treasure Homes utilized BP Solar's 175 Watt solar photovoltaic Integra, a module that directly mounted to the asphalt shingle roof, providing an aesthetically pleasing and virtually seamless design. The interior of the homes were beautifully merchandised to show that living in an energy efficient solar home would feel just like living in any other new home … only better.

Treasure Homes converted a model home garage into an energy efficient education room where potential home owners followed a path of "fallen leaves" to different displays showcasing the financial and environmental benefits of living in a Zero Energy home. The space was bright, fun and informative. Visitors could even flush 17 golf balls down a toilet to show the dual flush throne's capabilities. Sales agents viewed the room as a valuable sales tool.

Performance Results

The average homeowner's electric bills are 58 percent less than the average SMUD residential customer's electric bill. The greatest savings has been a homeowner with an 88 percent savings over the average SMUD customer. The electric bills at Fallen Leaf have ranged from a low of $9.17 to a high of $52.72. And at the first annual homeowners association meeting—a meeting traditionally full of complaints—all of the homeowners were giving testimonials of their energy savings.

Treasure Homes

Based in Roseville, California, Treasure Homes is a privately held residential development and home building company established in 1999. The company's primary focus is on building homes for first-time buyers, and comfortable move-up homes throughout the greater Sacramento Area and surrounding Northern California communities. **Treasure Homes' objectives are to deal honestly and fairly with home buyers and suppliers, and build innovative homes at an outstanding value with lasting quality.**

specifications

City: Sacramento, CA
# of Solar Homes: 32
Solar Provider: BP Solar
Utility: Sacramento Municipal Utility District (SMUD)
Average System Size: 2.45 kW
Annual Energy Production: Estimated 3,000 kWh per home
Module Type: BP Solar 175W solar photovoltaic Integra
Inverter: Xantrex GT 3.0 Series

Grupe Homes

Project

Carsten Crossings - Rocklin, CA

The solar, energy efficient homes at Carsten Crossings built by The Grupe Company feature six distinctive designs and range from approximately 2,100 to 2,700 square feet of living space. Models showcase three to five bedrooms and two to three-and-a-half bathrooms with flexible floor plans. Additional options include: dens, offices, retreats, game rooms, super-sized family rooms, workshops and tandem garages (per plan). The 144 homes at Carsten Crossings are set on spacious 6,000 square foot home sites and start in the high $400,000s.

The community is Grupe's first to feature all GrupeGreen homes that exceed California's Title 24 Building Standards and include on-site solar electricity as a standard feature, which can reduce electrical bills by up to 50 percent. Other standard GrupeGreen features include the Smart-Vent system to reduce cooling loads in the summer months, Continuous Ventilation Systems (CVS) for improved indoor air quality, 94 percent efficient heating systems, tankless water heaters, Low-E windows, enhanced (R49) attic insulation, radiant heat barriers and foam-wrapped (R5) building envelopes.

Part of the Whitney Ranch master planned community, Carsten Crossings is located across the street from the new Whitney High School. Just beyond is the 40-acre community park, including sports fields and play areas.

Making the Decision

The Grupe Company has always had a deep respect for the land and believes that respect is the first step in building timeless living environments. That philosophy eventually led the company to become **one of the first builders in California to earn Leadership in Energy and Environmental Design (LEED) certification for its Carsten Crossings community in Rocklin, where the company features its exclusive GrupeGreen homes.**

"Thinking green is good for the environment and good for the long-term appeal and livability of Carsten Crossings," **said Mark Fischer, Grupe's senior vice president of operations.** "By continuing to develop and improve the GrupeGreen program, we feel we are protecting the environment and improving the living experiences of homeowners."

Challenge

Fundamentally, Mr. Fischer believes that solar is the right thing to do for homeowners and the environment. But it took some convincing, and a hard look at the numbers, to prompt his company to be among the leaders of the solar home movement, and everyone wondered if the buyers would follow.

Additionally, the Carsten Crossings development was taking shape at the end of a major housing boom in Northern California. Midway through the project, Mr. Fischer could see the company would have to work much harder for sales in the slowed market and that every expense would have to be justified.

* Grupe Homes is part of the California Energy Commission's Zero Energy New Homes program. The program brings together energy efficient building design and technologies along with electricity generation from solar photovoltaics to reduce peak electricity use to nearly zero in new homes. The Zero Energy New Home program formed the foundation for the New Solar Homes Partnership.

Grupe Homes

Solution

By committing to offer solar as a standard feature on every home at Carsten Crossings, Mr. Fischer was able to secure the best possible price for materials and installation. The rebate from the California Energy Commission helped offset an additional 25 to 30 percent of the cost per unit. Mr. Fischer also made the argument that solar would help distinguish Carsten Crossings from other communities at Whitney Ranch, and accelerate the project absorption rate. Selling the homes faster could significantly reduce the company's carrying costs over time. Mr. Fischer was right. Carsten Crossings' homes sell an average of two times faster than other comparable communities nearby.

"In the beginning, some of the other developers at Whitney Ranch probably thought we were crazy to go solar on this project," said Mr. Fischer. **"Now, especially in a down market, they're all looking to the success of Carsten Crossings and acknowledge that the solar makes it easy for buyers to choose our community over the rest."**

Performance Results

The SunPower solar tiles Grupe uses blend in with typical concrete roofing tiles without taking away from the architectural design of the home. The seamless aesthetic of the tiles is actually a major selling point of the homes, in addition to electricity bill savings of between 60 and 70 percent.

Only a couple months into the hot Central Valley summer, Carsten Crossings homeowners began to compare electricity bills. Larry Brittain proudly pointed to a $75 utility bill for his 2,400 square foot home. Not only was this a significant savings compared to his previous home nearby, but the low utility bill came in July of 2006, a month when California experienced a record heat wave with temperatures higher than 100 degrees for two consecutive weeks. Residents were also pleased to qualify for the $2,000 federal tax credit at the end of the year.

The extraordinary sales and home buyer satisfaction at Carsten Crossings have convinced The Grupe Company to now offer SunPower solar systems in its upcoming Charlotte's Oaks development, a gated, 104-home project in Stockton, California.

The Grupe Company

The Grupe Company has been building award-winning communities for more than three decades, is renowned for its masterful planning and commitment to innovation and has played a leading role in Northern California's residential growth. Across 12 master planned communities, Grupe has established more than 400 acres of lakes and permanently preserved dedicated wildlife habitat areas and open space. The builder has created more than 200 parks, miles of trails and has planted more than 500,000 trees.

specifications

City: Rocklin, CA
# of Solar Homes: 144
Solar Provider: SunPower™
Utility: Pacific Gas and Electric (PG&E)
Average System Size: 2.4 kW
Annual Energy Production: Estimated 3,530 kWh per home
Module Type: SunPower SunTiles®
Inverter: Xantrex 2.5 GT Series

Shea Homes

Project

Madeira at Del Sur - San Diego, CA

Located seven miles from the beaches of Del Mar, Madeira at Del Sur captures the essence of San Diego's rich architectural heritage with a diverse mix of classic styles. Ranging from 1,785 to 2,269 square feet, Madeira's five stylish floor plans feature two-story and third floor master retreats. Select plans are enhanced by spacious courtyards or patios for outdoor living and entertaining. Homes start in the mid $600,000s.

Making the Decision

The vision for Madeira at Del Sur began with Black Mountain Ranch LLC, where a truly sustainable master planned community is being realized through a variety of features including mature tree-lined streets, 4,677 acres of open space and weather-based irrigation systems. Homes include tankless water heaters and all builders offer solar photovoltaic (PV) systems. **When completed, Del Sur will be one of the largest solar powered communities in California.**

Shea Homes has always maintained a deep commitment to doing its part to help preserve open spaces, conserve natural resources and integrate sustainability features into its homes and communities. Rather than sitting back and waiting to see what other builders do, Shea Homes is always looking for new eco-friendly methods and technologies to implement. In fact, the company built its first solar community nearly five years ago.

When Shea learned of Del Sur's requirement that all builders offer solar panels, it "wanted to push that as far as we could," **says Alex Plishner, community development manager for Shea Homes San Diego.** "We made a commitment to pre-plot all of the homes at Madeira that had a southern facing orientation [optimal positioning for solar panels]."

Challenge

Given an already skeptical and slowing market, Shea remained committed to introducing solar technologies to the marketplace. The biggest challenge the company faced was convincing home buyers of the value solar provided. "The upfront cost was a bit of a hurdle for us," says Mr. Plishner. "Most buyers would rather select granite countertops than solar panels. But once we could demonstrate the long-term savings, and could back that up with real numbers, buyers soon saw the value."

On the builder side, justifying the added construction cost was also a bit of a hurdle. "You definitely need to make sure that you can make up the expense in the end," notes Mr. Plishner. "Once both the buyer and the builder understand that this is a long-term investment and see the cost savings potential, it's a much easier sale."

Shea Homes

Solution

Shea Homes decided to offer solar on 27 of the 78 homes at Madeira as a $14,000 option and has been very pleased with the results. The $6,000 per home rebate from the California Energy Commission helped offset the cost of each system, a savings which Shea passed directly onto buyers. "We basically offer the panels at cost," comments Mr. Plishner. In addition, home buyers are eligible for a $2,000 federal tax credit.

Mr. Plishner definitely sees solar panels as a great marketing tool and key point of differentiation. **"We've had great response from offering solar. Not many builders are there yet, so you can really get great bang for your buck in terms of marketing power."**

Shea chose SunPower as their PV provider and have been extremely satisfied with the level of service the company provides. Not only does the company handle all the rebate paperwork for the builder, but representatives from SunPower help educate home buyers about the benefits and train them on how to use the systems and track their daily energy consumption and production online.

Shea found tremendous enthusiasm from buyers within the Madeira community. "Early adopters have really gravitated to the technology quickly," says Mr. Plishner. "They are eager to learn how the system works and how they can maximize its output to increase their savings on their electricity bills. Once buyers understand the value of solar, they want to push the technology and see how much they can save."

Madeira homeowner Janene R. was eager to purchase a new home with an eco-friendly component. **"I'm just happy to do something that is helping to contribute to a better quality of life for everyone,"** exclaims Janene. While she hasn't done extensive cost analysis, Janene estimates that in addition to the $2,000 federal tax credit, she saves $50 a month on her electricity bill.

Performance Results

"Madeira is definitely one of our most popular communities," says Mr. Plishner. While there are a number of factors to figure into what makes the community such a success, Mr. Plishner is certain that offering solar is a big piece of that. Shea has been so pleased with the success of Madeira at Del Sur that the company is looking to offer more solar communities in the near future.

Shea Homes San Diego

Shea Homes San Diego is a division of Shea Homes Limited Partnership, an independent member of the Shea family of companies, which celebrated its 125th anniversary in 2006. The company was honored in 2005 as one of "America's Best Builders" by the National Association of Home Builders and now as "2007 Builder of the Year" by Professional Builder Magazine.

specifications

City: San Diego, CA
# of Solar Homes: 27
Solar Provider: SunPower™
Utility: San Diego Gas and Electric (SDG&E)
Average System Size: 2.5 kW
Annual Energy Production: Estimated 3,750 kWh per home
Module Type: SunPower SunTiles®
Inverter: Xantrex 2.5 GT Series

Centex Homes

Project

Avignon - Pleasanton, CA

Avignon is a Centex Homes "Powersave Plus" community and the first Zero Energy* energy efficient new home community in Alameda County. These homes provide cost-effective, energy features and roof-integrated solar electric systems as standard features. **Avignon homes exceed Title 24 Standards by 15 percent, reducing homeowners' average electric bills by 70 percent.**

Avignon features luxury French-inspired homes ranging from 3,670 to 6,340 square feet nestled in a picturesque vineyard setting. Homes in this community are comparatively priced for the area with extensive upgrade options available and energy efficient solar electric systems included in every home.

Making the Decision

Centex aims for Avignon to be a leader in preserving the environment by using fewer natural resources and producing less greenhouse gasses than other communities. In addition to photovoltaic (PV) systems that produce reliable, clean, and renewable electricity every day, the homes' tight building envelops and well-designed, two-zone HVAC systems offer homeowners improved comfort and quality.

Challenge

Jeff Jacobs, project manager for the Centex Homes' Northern California division, is an energy efficiency evangelist in the building industry. "It's the right thing to do," he says. But he acknowledges the challenge of convincing home buyers and builders — including his own bosses and co-workers — of the merits of super energy efficient homes. "Most home sales people do not know how to market solar energy to home buyers," continues Mr. Jacobs, "and most consumers don't demand it."

Solution

Centex Homes focuses on educating homeowners about the economic incentives for buying solar. They explain to home buyers that the PV system is hooked up to the local utility grid, so electricity can be drawn when needed, and sold back to the utility company for homeowner credit when excess electricity is produced by the system.

To appease buyers' concerns about the aesthetics of solar, Avignon homes feature SunTiles® from SunPower, which blend into the roofline and architectural style of the homes.

* Centex Homes is part of the Department of Energy's Zero Energy Home program. A Zero Energy Home combines state-of-the-art, energy efficient construction and appliances with commercially available renewable energy systems such as solar water heating and solar electricity. This combination can result in net zero energy consumption from the utility provider. The Zero Energy Home program formed the foundation for the New Solar Homes Partnership.

Centex Homes

> We're so happy to have solar because over the summer months we've been generating so much power – and it makes us feel green. It's easy to use…there's hardly anything the homeowner has to do.
>
> – Kevin Q., Avignon resident

Performance Results

Avignon homes are built to high efficiency standards, which specify tight ducts, mechanically designed heating and air conditioning systems, spectrally selective glass windows and properly installed insulation; and, they exceed California's Building Title 24 Standards code, by at least 15 percent. Licensed engineers designed the HVAC system for optimal performance and third party inspectors test for quality and performance. **The cost benefit of an energy efficient home is particularly apparent during peak power periods when monthly electric bills average only $39.**

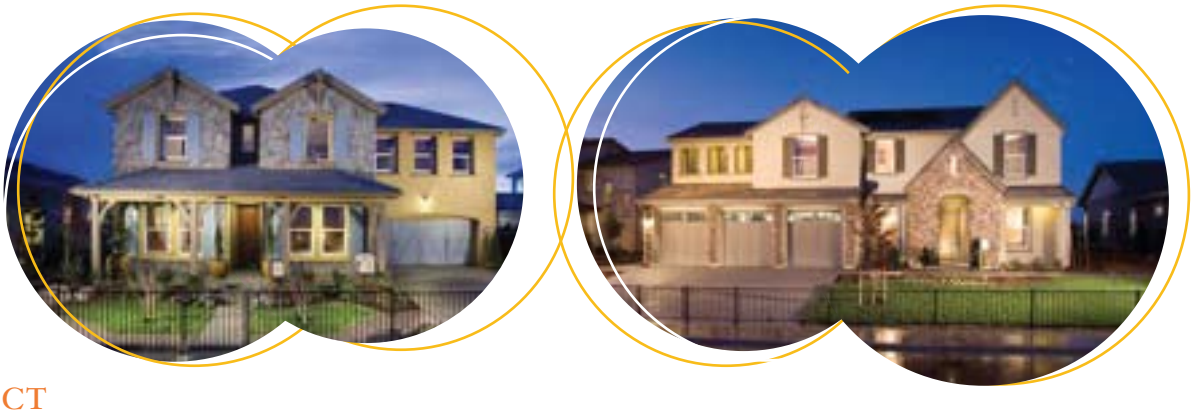
Centex Homes

Centex Homes' primary focus is in building homes that use efficient, clean and renewable energy, helping to create a stronger economy, a cleaner environment and greater energy independence for America. The Dallas-based company was founded in 1950 and is one of the nation's leading home building companies. Centex operates in major U.S. markets in 25 states, and delivered more than 35,000 homes in the United States in its most recent fiscal year.

specifications

City: Pleasanton, CA
# of Solar Homes: 30
Solar Provider: SunPower™
Utility: Pacific Gas and Electric (PG&E)
Average System Size: 3.5 kW
Annual Energy Production: Estimated 4,251 kWh per home
Module Type: SunPower SunTiles®
Inverter: SPRx Solar Inverter Monitor

Lennar



Project

Laureate, Ironcrest and Wayfarer - Roseville, CA

In January of 2007, Lennar's Sacramento division unveiled plans to build 572 energy efficient homes within five neighborhoods at the Westpark master planned community in Roseville, CA. Three of the communities — Laureate, Ironcrest and Wayfarer — include approximately 270 homes, with Sentiero and Walkabout coming soon. The homes will feature Lennar's SOLARplus program, which combines energy efficient design with on-site solar photovoltaic (PV) electricity systems, allowing homes to generate up to 60 percent of total household energy needs. The average monthly electric bill for a SOLARplus home in Lennar's Roseville developments is estimated to be $48.

Based on the company's success in selling solar homes in Roseville, Lennar's Bay Area division pledged to offer solar PV systems as a standard feature in all of its new homes, which will be built 35 percent above Title 24 energy efficiency requirements.

Making the Decision

Les Lifter, vice president of marketing for Lennar Homes, said the division's decision to offer solar as a standard feature resulted from a "perfect storm" of the solar initiative pushed by Gov. Schwarzenegger, the expansion of solar technology companies, the lower cost of solar technology and the burgeoning consumer demand and interest in sustainable energy.

As a company, Lennar made the decision to offer homes with solar features because **it recognizes the need to develop communities that generate clean, renewable energy.** Lennar wants to help protect its homeowners against rising energy costs, and solar provides great economic savings on utility bills.

Challenge

There has been a learning curve for Lennar marketing and sales teams to understand and communicate the benefits of solar and energy efficiency features effectively. Seminars and custom-produced materials by PV vendors help educate both the sales teams and home buyers about the simplicity, reliability and savings of a solar energy efficient home.

Solution

Lennar began working with PV vendor SunPower early in the design and construction phase, enabling the vendor to educate construction, purchasing, marketing and sales departments about how the systems work and their benefits. **SunPower also worked closely with the local utility and municipality to ensure that solar installations were executed properly.**

To help educate home buyers, Lennar developed "Solar Rooms" in its model homes. These showrooms feature a wall mural depicting how PV is installed and how the inverter box works, along with a continuously streaming video about solar. Other marketing tools Lennar uses include press conferences, a solar brochure, video, flyers, banners and print ads.

Lennar

> We've only been in our new home a few months but are already very surprised by our utility savings. The home is so efficient – I tell all my friends. Plus, I'm helping the environment and I like that.
>
> – Katrina W., Wayfarer resident

Performance Results

"The SunPower solar systems are fully integrated into our homes' design. They operate simply, requiring no effort by our customers to enjoy the monthly savings," says Jeff Panasiti, president of Lennar Homes' Sacramento division. "As a builder, including roof-integrated solar panels in the homes' construction makes perfect sense. It should come as no surprise that these homes sell faster."

The national media attention Lennar received for its commitment to solar has also sparked interest among potential home buyers who want to learn more about their SOLARplus homes.

According to Mr. Panasiti, **"Home buyer traffic to our solar communities is more than double compared to communities that do not offer solar.** Our SOLARplus communities in Placer County are selling at a higher rate than comparable new homes in the six neighboring communities."

The volume of PV systems necessary to fulfill Lennar's commitment to include solar as a standard feature at all of their Sacramento area communities helped lower the cost per unit and simplified the installation process. With 1,000 homes planned in the Bay Area and Sacramento by the end of 2008, Lennar qualifies to receive the top rebate available under the California Energy Commission's New Solar Homes Partnership depending on the PV system size and their continued commitment to include solar as a standard feature.

According to Roseville Electric, integration of energy efficient measures and **the PV system in Lennar's developments will reduce greenhouse gas emissions by 4.9 million pounds,** which is equivalent to planting more than 92,000 trees or taking more than 400 cars off the road annually. Each SOLARplus home provides environmental savings equivalent to the carbon dioxide absorbed by one acre of trees or the emissions from driving an average car for 75,411 miles over 30 years.

Lennar Homes

Lennar Corporation, founded in 1954, is headquartered in Miami, Florida and is one of the nation's leading builders of quality homes. Lennar builds first time, move-up and retirement homes in communities that cater to almost any lifestyle — such as urban, golf course, active adult and suburban communities.

specifications

City: Roseville, CA
# of Solar Homes: 270-650
Solar Provider: SunPower™
Utility: Roseville Electric
Average System Size: 2.3 kW
Annual Energy Production: Estimated 1,400 kWh per home
Module Type: SunPower SunTiles®
Inverter: SPRx Solar Inverter Monitor

Clarum Homes

Project

Vista Montaña - Watsonville, CA

The Clarum Homes community, Vista Montaña in Watsonville, California, is one of the nation's largest energy efficient Zero Energy* home communities. **Every home in the Vista Montaña community is an Enviro-Home™, Clarum's energy efficient and environmentally friendly home distinction.** Known primarily as an agricultural town, Watsonville is making a gradual shift to becoming a suburb of Santa Cruz. The Vista Montaña subdivision targets first-time and move-up buyers who have been priced out of Santa Cruz neighborhoods, but maintain the same prevailing "earth-friendly" mindset of those residents. Vista Montaña includes 177 single-family homes, 80 townhouses, and 132 apartments. Initially prices started at $379,000, but some units sold for as much as $600,000. The all-solar development opened in August 2003 and sold out within one year.

Making the Decision

John Suppes, founder and president of Clarum Homes, did not hesitate when it came to building solar homes. "I was first introduced to the solar and green building methods at a national home builder conference in Atlanta in 1999," Mr. Suppes says. I came back and immediately started incorporating the ideas into our communities so that **we could offer more efficient homes and give our home buyers the opportunity to actually produce electricity in the midst of this energy crisis we are facing.** I feel very strongly about the need to promote sustainable energy sources."

With a combined goal of bringing the value of solar electric power, green building products and energy efficiency to homeowners, Clarum, AstroPower and ConSol designed and built these homes that will serve as a benchmark within both the community and the industry.

Challenge

A key challenge for Clarum was to make the energy efficient homes affordable and marketable. Clarum has found that in most cases it's not the energy efficient features that sell buyers. Educating buyers about energy efficiency is key to making the sale.

Solution

The homes are selling faster than Clarum Homes can build them. According to Mr. Suppes, owners of homes where energy efficient and solar were standard features report substantially lower energy bills than neighbors who bought less efficient homes. They also said they were able to resell their homes at a greater profit and were more likely to buy the same home if they had to choose again.

Performance Results

Clarum partnered with ConSol and others to develop its Enviro-Home™ package of energy efficiency and solar power features, designed to reduce homeowner energy bills by 60-90 percent.

* Clarum Homes is part of the Department of Energy's Zero Energy Home program. A Zero Energy Home combines state-of-the-art, energy-efficient construction and appliances with commercially available renewable energy systems such as solar water heating and solar electricity. This combination can result in net zero energy consumption from the utility provider. The Zero Energy Home program formed the foundation for the New Solar Homes Partnership.

Clarum Homes

> You never expect to have a new house for a first home and then to have, on top of that, a home so technologically superior is pretty exciting.
>
> – Robin M., Vista Montaña resident

Each Enviro-Home™ has been professionally designed, certified and inspected to reduce energy consumption and use sustainable resources while improving comfort. The program has also earned the U.S. Environmental Protection Agency's ENERGY STAR® seal, ConSol's ComfortWise designation and the California Building Industry Institute's California Green Builder certification.

In addition to a solar electric home power system, each Enviro-Home™ in the Vista Montaña community **features a tankless on-demand water heater and a high efficiency furnace as standard features.** The homes also feature foam-wrapped building envelopes, increased insulation, radiant roof barriers, advanced HVAC technology, tightly sealed ducts, and low-E energy efficient windows. Ceiling fans, fluorescent light bulbs, water conserving plumbing fixtures and water conserving landscaping are also incorporated, providing homeowners with additional utility savings.

Clarum Homes

Founded in 1994 and headquartered in Palo Alto, California, Clarum Homes is a family-owned development company devoted to building exceptional new home communities and apartments in California. Clarum's mission of building sustainable communities began in 1999 when it began installing solar electric systems in its homes as standard equipment. Clarum Homes is now recognized nationwide as a leader in green building.

specifications

City: Watsonville, CA
# of Solar Homes: 177 Single-Family Homes, 80 Townhouses, 132 Apartments
Solar Provider: AstroPower
Utility: Pacific Gas and Electric (PG&E)
Average System Size: 1.2-2.4 kW
Annual Energy Production: Estimated 2,550 kWh per home
Module Type: Sunline™ solar electric power systems
Inverter: Sharp Sunvista™

Premier Homes

Project

Premier Gardens - Sacramento, CA

Premier Gardens, Sacramento County's first Zero Energy* subdivision, was completed in early 2005 by Premier Homes Properties, Inc. The neighborhood consists of 95 energy efficient homes, with five unique floor plan designs ranging in size from 1,285 to 2,248 square feet. Branded as a "Premier ProEnergy Community," the all-solar community was designed to offer entry level buyers a number of standard energy saving features and cut home energy bills by as much as 50 percent.

Located close to Highway 50, with the Sierras to the east, the Bay Area to the west, and the American River minutes away, Premier Gardens ensures all the conveniences that accompany such a coveted central location.

Making the Decision

Offering solar **"became an opportunity to set ourselves apart as a small builder,"** said Kevin Yttrup, president of Premier Homes. **"We felt the market would need more energy efficiency in California as time went on."** Having offered solar electric systems as an optional upgrade in previous communities, Premier Homes has been committed to energy efficient construction for more than a decade.

Premier cites California's energy crisis and the ongoing rise in utility bills, particularly in summer months, as major factors in consumer demand for energy efficient homes. At a time when advancements in solar technology had gained momentum, and consumer interest was peaking, **Premier sought to establish itself as an industry pioneer paving the way for energy efficient homes.**

Challenge

As a small builder, the high upfront cost of offering solar was a concern for Premier. However, because the community opened for sale during the height of the housing boom, it became clear that justifying the additional $10,000 to $15,000 to buyers was futile at a time when every community had lengthy waiting lists.

Solution

Premier was able to address the aesthetics issue by **installing roof-integrated panels which were virtually unnoticeable.** The rebates and tax breaks offered by the state helped bring down the per home cost of adding solar panels and SMUD further subsidized the project with $7,000 per home and provided $20,000 in marketing support. With a marketing campaign, the builder was able to increase traffic to the community and educate buyers on the benefits of choosing an energy efficient home.

* Premier Homes is part of the Department of Energy's Zero Energy Home program. A Zero Energy Home combines state-of-the-art, energy efficient construction and appliances with commercially available renewable energy systems such as solar water heating and solar electricity. This combination can result in net zero energy consumption from the utility provider. The Zero Energy Home program formed the foundation for the New Solar Homes Partnership.

Premier Homes

> Premier Gardens is a unique opportunity for first-time home buyers to live in an extremely energy efficient home that will provide them with a solid value, both now and in years to come.
>
> – Kevin Yttrup, president of Premier Homes

Performance Results

Premier chose to distinguish Premier Gardens from neighboring communities by marketing it as an **energy efficient community for entry-level buyers with an emphasis on the cost savings potential.** Rather than offering granite countertops, Premier made solar PV systems standard, along with high-efficiency furnaces and air conditioners, tankless water heaters, high-performance windows and better insulation. Although homes in the area sold for similar prices, **homeowners in the Premier community paid an average of $600 less per year on their energy bills** compared to homeowners in standard construction homes.

All of Premier Gardens' homes meet the Department of Energy Building America goal for today's Zero Energy New Homes with a 60 percent reduction in power drawn from the grid and reduced natural gas consumption. SMUD certified the homes as SMUD Solar Advantage Homes, which means the homes exceed the current California Title 24 Building Standards energy cooling requirements by as much as 30 percent. In addition, the homes meet state ENERGY STAR® Homes requirements.

Premier Homes

With more than two decades of combined experience in distinctive custom home building, Kevin Yttrup and John Stewart, along with their team of experts at Premier Homes, bring a vast amount of experience and a unique sense of understanding to the individual needs of their buyers. Premier Homes has built a reputation for exceeding the needs of individual buyers — a reputation based on creating distinctive and diverse homes that bring both value and prestige to their customers, the community and the region.

specifications

City: Sacramento, CA
# of Solar Homes: 95
Solar Provider: GE Energy
Utility: Sacramento Municipal Utility District (SMUD)
Average System Size: 2 kW
Annual Energy Production: Estimated 3,330 kWh
Module Type: 48 GE Energy GT 55 BIPV
Inverter: SMA Sunnyboy 2500 Inverter

Christopherson Homes

Project

Wisteria - Rocklin, CA

Set among the rolling hills and towering oaks of Rocklin is Whitney Ranch, a master planned community offering a rich tradition of gracious living. Wisteria at Whitney Ranch is a collection of three home designs with distinctive western ranch, ranch farmhouse and adobe ranch styling that celebrates the heritage and the relaxed mood of the setting. Home sites average from 9,000 to 10,000 square feet, with single and two-story homes ranging from 2,700 to 4,600 square feet with four to six bedrooms. Neighboring open space gives each home its own serenity. Pricing starts from the mid $700,000's.

Making the Decision

Facing a lackluster housing market, Christopherson Homes wanted to identify offerings that would further set its Wisteria community apart. "You need something extra to bring in buyers in this market," says Jan Willett, project purchasing coordinator for Christopherson. With 25 of the community's 60 homes already complete, selling at a rate of about one a month, the builder was eager to differentiate itself to boost sales. Honing in on the growing concern among Californians to conserve energy and preserve natural resources, **they determined that building energy efficient homes complete with solar panels would be an ideal way to attract more buyers.**

Aware of the California Energy Commission's New Solar Home Partnership (NSHP), Christopherson contacted heating and cooling experts Beutler Corporation to advise them on energy efficient measures, along with Old Country Roofing (OCR) to help install solar panels and assist with the NSHP application.

Challenge

Being the first builder to apply for the NSHP meant that Christopherson was treading in unchartered territory. Naturally, questions arose regarding what documentation was required to complete the NSHP application. "Knowing what to ask for and who to ask was probably our biggest challenge," says Bill Reaugh, technical services manager for OCR. "Once I understood what was needed, **I found the process to be pretty straightforward and understandable."**

Given that construction was already underway, Christopherson Homes also needed to make some modifications to existing home plans to ensure the proper energy efficiency measures were incorporated into the homes and properly documented and approved by Certified Energy Plans Examiners (CEPE).

Solution

Project purchasing coordinator Jan Willett reported that the energy efficiency improvements suggested by Beutler were relatively easy to make. They increased the insulation in attics and walls, installed double-paned windows and high-efficiency heating and air conditioning systems.

The OCR Solar Solutions division of Old Country Roofing supplied and installed photovoltaic (PV) systems that included BP Solar Energy Tiles and Xantrex inverters. The solar systems produce 2.4 kilowatts (kW) of electricity using building-integrated modules. OCR Solar Solutions also completed the NSHP application on behalf of Christopherson Homes.

Christopherson Homes

> We knew we wanted to offer solar in this community, but the only way we could afford to do so was to take advantage of the rebates from both the Energy Commission and PG&E. They really helped us offset the costs and enabled us to offer buyers something above and beyond what the average new home is equipped with.
>
> – Jan Willett, project purchasing coordinator for Christopherson Homes

By enrolling in the NSHP, Christopherson Homes was eligible to receive a $5,276 incentive per home from the California Energy Commission and a $2,000 new construction energy efficiency program rebate from PG&E. **In addition, individual homeowners are eligible for a federal tax credit of $2,000 for each solar home.**

Performance Results

As the first builder to enroll in the NSHP, Christopherson Homes was able to promote Wisteria as an energy efficient, solar development, garnering significant media attention. They immediately saw an increase in foot traffic to the community. In fact, once the new solar energy savings systems were announced, the builder sold five homes in the first two weeks. "In the current market, we continue to see increased traffic and sales at this community and we're convinced that solar is a major contributing factor. In fact, other builders in the area are starting to add solar because they've seen the success we've had with it at Wisteria," says Jan Willet, project purchasing coordinator for Christopherson Homes.

Both Christopherson and OCR representatives agree they will continue to work with the Energy Commission's NSHP. They were so impressed by how the solar homes sold in the current market that they have looked into retrofitting three previously built homes in the community with solar panels.

Christopherson Homes

Founded in 1978 by Keith and Brenda Christopherson, the company has been voted Sonoma County Builder of the Year several times. Its communities are known for quality and design in highly desirable locations throughout Northern California. After move-in, the Christopherson warranty teams have the authority and skills to resolve service situations promptly. With over 3,500 homes in more than 30 communities, Christopherson's neighborhoods are situated throughout Napa, Sonoma, Solano, Sacramento, El Dorado and Placer counties.

*OCR Solar and Roofing is Petersen-Dean, Inc.

specifications

City: Rocklin, CA
# of Solar Homes: 35
Solar Provider: Old Country Roofing
Utility: Pacific Gas and Electric (PG&E)
Average System Size: 2.4 kW
Annual Energy Production: Estimated 3,500 kWh per home
Module Type: BP Solar Tiles
Inverter: Xantrex

Homeowner Case Studies

Mudit & Shweta S.

Community: **Carsten Crossings at Whitney Ranch**
Builder: **Grupe Homes**
City: **Rocklin, CA**
PV Provider: **SunPower**

After seeing solar panels on a friend's home in Sacramento, architect Mudit and his software developer wife, Shweta, became intrigued by both the monthly savings and the positive impact solar panels could have on the environment. When the couple decided to move from their apartment in Citrus Heights, CA and began looking for a new home in the Sacramento area, they were pleased to learn that Grupe Homes offered solar panels. "I looked initially and found only a couple of builders offering solar in locations where I was not interested," says Mudit. "So when I came across this development, it was a pleasant surprise for me."

The couple learned more about solar panels and the benefits to both their wallet and the world from a Grupe sales agent. "When I came across Grupe, I was very happy to see their efforts to make this a truly green development. It made the choice easier for me," says Mudit.

The couple chose a 2,400 square foot home in Carsten Crossings with four bedrooms, three bathrooms and solar panels as a standard feature. The couple estimates they save about $40-$60 a month on their electricity bill. Mudit is such a fan of the solar panels that if presented with a comparable home for $20,000 less and no solar panels, he would still choose the home he has. "It not only helped reduce my monthly bills, added resale value and helps the environment, but it's a cool technology to show my friends and family when they come over to visit," says Mudit.

Janene R.

Community: **Madeira at Del Sur**
Builder: **Shea Homes**
City: **San Diego, CA**
PV Provider: **SunPower**

Advertising executive Janene was eager to enjoy all the benefits of a newly constructed home and really concerned with finding one that was eco-friendly. "I lived near where the new Del Sur community was being built in San Diego and really enjoyed the idea of the environmental approach and attention to detail that they were providing," says Janene. "I wanted to do as much as I could for the environment while still enjoying a new home."

Packaged as an option by Shea Homes, Janene was happy to add solar panels to her house. Her only concern was that they might be an eyesore on her beautiful new home. Once she learned of the integrated panels offered by SunPower she wanted to do her part to save energy. "I'm just happy to do something that is helping to contribute to a better quality of life for everyone," says Janene.

While she hasn't done extensive cost savings analysis, Janene estimates her monthly electricity savings to be about $50 per month.

David N.

Community: **Laureate at WestPark**
Builder: **Lennar**
City: **Roseville, CA**
PV Provider: **SunPower**

David, a consultant to the Food and Drug Administration and his fiancée Shelly and nine-year-old son Michael moved into their solar home in April, 2007. A loyal Lennar customer, David is no stranger to homeownership. "This is my second Lennar home, the third new home and the sixth home I've owned," he explains. In addition to the community's proximity to the airport, the family was very happy to find a community that offered solar panels. "I wanted to do something good. I'm an electrical engineer and very into the solar power concept," said David.

Although they were not initially in the market for a solar home, the couple was impressed by their previous experience with Lennar and pleased to learn that solar was included in the price of the home. "The cost was the same as other builders without the panels," notes David.

The family's 2,600 square foot, single-story home has four bedrooms, three bathrooms,10-foot ceilings and is part of Lennar's SOLARplus program. SOLARplus combines energy efficient design with on-site solar electricity which generates up to 60 percent of the home's total household energy. David's first electricity bill in his new home was just $10.

"I love that the power box is connected to the Internet and I can check my home's power output from a website," says David.

Solar Panel Providers

SOLAR PANEL PROVIDERS

Advanced Solar Integration Technologies
420 Goddard
Irvine, CA 92618
P 949.202.5801 / 866.685.9266
cara@adv-solar.com
www.adv-solar.com

BP Solar
P 301.698.4448
F 301.698.4200
Paul.garvison@bp.com
www.bp.com

GE Solar
P 866.750.3150
solarsales@ps.ge.com
www.gepower.com

Integrated Power Corporation
384 Bel Marin Keys Blvd., Suite 230
Novato, CA 94949
P 415.884.5555
F 415.884.5557
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www.ipowercorp.com

Kyocera Solar, Inc.
8611 Balboa Avenue
San Diego, CA 92123
P 858.614.2524
cecilia.aguillon@kyocera.com
www.KyoceraSolar.com

OCR Solar & Roofing
707 Aldridge Road, Suite A
Vacaville, CA 95688
P 866.469.7470 / 707.469.7470
F 707.469.6248
www.OCRSolarAndRoofing.com

*OCR Solar and Roofing is Petersen-Dean, Inc.

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El Dorado Hills, CA 95762
P 916.939.0400
F 916.939.0490
info@premierpower.com
www.PremierPower.com

REC Solar
P 888.OK.SOLAR
www.recsolar.com

Sierra Solar Systems
563 C Idaho Maryland Road
Grass Valley, CA 95945
P 888.ON SOLAR (888.667.6527)
F 530.273.1760
solarjon@sierrasolar.com

SCHOTT Solar, Inc.
2260 Lava Ridge Court, Suite 102
Roseville, CA 95661
P 916.774.3000
F 916.784.9781
info.solar@us.schott.com

SunPower
3939 N. 1st Street
San Jose, CA 95134
P 408.240.5500
F 408.240.5400
Sales 877.SUN.0123 (877.786.0123)
www.SunPowerCorp.com

Additional registered retailers available at www.gosolarcalifornia.ca.gov/retailers/search-new.php

Solar In The News

Sacramento Bee—The Sun's the Star of Earth Day
April 28, 2009

EARTH DAY CONTINUES

Earth Day is not over yet. At least two more big green-fests are set for this weekend:

Earth in action: California State Parks Foundation invites the public to honor Earth Day by volunteering this weekend at one of several park cleanups around the state. Visit www.calparks.org to sign up.
- Where: Local projects at Folsom Lake State Recreation Area, Auburn State Recreation Area and Clarksburg River Access Facility.
- When: Various start times, Saturday

Sacramento Earth Day: Organizers invite participants to "Be the Solution" at the annual event featuring live music and 150 informational booths on almost everything green. Check out www.earthday.net for more information.
- Where: Southside Park (Eighth and T streets)
- When: 11 a.m. Sunday

ANNE CHADWICK WILLIAMS awilliams@sacbee.com

Sales manager Cathy Moy shows off an energy-efficient window shade Wednesday as downtown workers search for tips and deals at booths set up by utility companies and contractors at the Capitol for Earth Day. The event, one of several in the region, also honored teens from around the state for their solar projects.

The sun's the star of Earth Day

By Ed Fletcher
efletcher@sacbee.com

Rows of vendors lining the south lawn of the state Capitol on Wednesday were prepared to extol the merits of solar power, but the sun did most of the talking.

Amid record-setting heat, a couple of hundred downtown workers trolled the booths in search of energy-saving tips, deals and know-how. The Capitol Earth Day Celebration was one of several held around the region Wednesday, and one of hundreds staged around the world. Another Sacramento event is planned Sunday at Southside Park.

"We have a lot of sun. I don't know if there should be any commercial site where there isn't solar," said Jae Caro Del Castillo, a North Natomas resident who called himself an early solar adapter.

Solar panels installed at his former home paid for themselves two or three times over, Caro Del Castillo said. And when he sold the home, the solar array was a big selling point.

The event – which also honored teens from across the state for their solar projects – was populated by utility companies, eco-friendly redecoraters, green contractors, and makers of low-flow water systems.

Still, products capturing the sun were the stars.

The California Energy Commission chose the day to kick off a green makeover contest. Participants who visit www.gosolarcalifornia.org and take a short quiz can register to win an home renovation aimed at reducing energy consumption and the home's overall impact on the environment.

In 2006, Gov. Arnold Schwarzenegger signed legislation kicking off the Million Solar Roofs Initiative and setting a goal of adding 3,000 megawatts of electricity to the state's power grid through solar installations at homes and businesses by 2017.

To date, 441 megawatts have been added, said Adam Gottlieb, spokesman for the California Energy Commission.

Kristen Smith was on hand to demonstrate ways to cut water use. With the push of a button, two shower heads began filling two large, clear plastic pipes. Within seconds it was obvious that the traditional shower head was using much more water than the low-flow model.

"You don't have to trade water pressure for efficiency," said Smith, an educator with Resource Action Programs.

At a separate Earth Day event, a group of 27 area residents and business leaders boarded a natural gas-powered Regional Transit bus for a "Green Bus Tour" of projects aimed at diminishing impact on the environment. The Sacramento Asian Pacific Chamber of Commerce organized the tour. Patricia Fong Kushida, chamber president, said her group wants to help bring green jobs to the region.

Sacramento Mayor Kevin Johnson was there to kick off the event but didn't board the bus.

The tour started with a candid discussion of hydrogen fuel-cell vehicles. They have promise, said Daniel Gehringer of the Sacramento Municipal Utility District. But, standing next to SMUD's fuel-cell Mercedes-Benz at Cal Expo, he added that price, range and reliability issues still need to be resolved before they are ready for the mass market.

The tour also stopped at the Port of West Sacramento, LEED-certified restaurant Hot Italian in Sacramento and the California Lighting Technology Center in Davis.

Call The Bee's Ed Fletcher, (916) 321-1269.

Green Home Builder Buyer's Guide—California Embraces Solar Housing
2008 - 2009

CALIFORNIA ENERGY COMMISSION

CALIFORNIA EMBRACES SOLAR HOUSING

An increasing amount of Californians are embracing solar technology as a way to combat rising energy prices.

BY JACKALYNE PFANNENSTIEL

Today's builders are facing more pressure than ever before. The real estate climate is proving tougher than anyone expected, making it a struggle to attract buyers and sell homes. Add to that the pressure of an increasingly green marketplace demanding environmentally sensitive products. Today's consumers are integrating green principles into their everyday life by using reusable shopping bags, replacing light bulbs with energy saving compact florescent lights and driving hybrid cars. Now, there is a growing demand for homes that are also greener and better for the environment.

In the past, the costs associated with green building products and processes have proven a major barrier against widespread adoption in new home construction. Few buyers were prepared to pay a premium for a "green" home or any of the new technologies designed to save energy, water, or help preserve the environment. Consequently, builders could not justify including "green" elements beyond those required by building standards because the majority of their consumers were not willing to pay the price for them.

However, more and more of today's consumers—especially those in California—are demanding that their homes be energy efficient and environmentally sensitive. Research recently released by the California Energy Commission shows that in the face of rising energy costs, the majority of new and potential home buyers in the state are looking for energy efficiency when purchasing a new home.

Specifically, 88 percent of respondents say the high cost of electricity has now become an important factor in their home buying decisions. Nearly three out of four of those surveyed believe homebuilders in the state should make rooftop solar electric systems a standard feature.

As a result, 62 percent also say they would be willing to consider purchasing a solar electric system for a newly constructed home. Support then further increases to 72 percent when respondents hear a brief description of how these systems work to save electricity and money. The principal factors motivating these interests are the perceptions of savings on monthly utility bills and the knowledge that they too can improve the environment.

Fortunately, for builders in California giving these buyers what they want is becoming much easier. In Gov. Arnold Schwarzenegger's $3.3 billion California Solar Initiative designed to help move the state toward a cleaner energy future, California has set a goal to create 3,000 megawatts of new solar-produced electricity by 2017. The New Solar Homes Partnership (NSHP) is a component of the California Solar Initiative and has a goal to produce 400 megawatts of solar electricity on approximately 160,000 new homes.

"Research recently released by the California Energy Commission shows that in the face of rising energy costs, the majority of new and potential home buyers in the state are looking for energy efficiency when purchasing a new home and that solar is an important choice in the minds of today's buyers."

The Governor asked the California Energy Commission to work with new home builders to create a self-sustaining market for solar homes where builders could incorporate high levels of energy efficiency with high performing solar systems to reduce a home owner's electric bill by up to 60 percent.

The Energy Commission's goal is to assist the industry in constructing and selling new energy efficient, solar homes. A new home that qualifies for the NSHP must achieve energy efficiency levels substantially greater than the requirements of the current Title 24 Building Standards. The builder can choose to comply with either of the two tiers of energy efficiency measures:

Tier I certification requries15 percent reduction in the residential building's combined space heating, cooling and water heating energy compared to the current Title 24 Standards.

Tier II certification requires 35 percent reduction in the residential building's combined space heating, cooling and water heating energy, and 40 percent in the residential building's space cooling (air conditioning) energy compared to the current Title 24 Standards.

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New York Times—A Green Energy Industry Takes Root Under the California Sun
February 1, 2008

A Green Energy Industry Takes Root Under the California Sun

By MATT RICHTEL and JOHN MARKOFF

SAN FRANCISCO — The sun is starting to grow jobs.

While interest in alternative energy is climbing across the United States, solar power especially is rising in California, the product of billions of dollars in investment and mountains of enthusiasm.

In recent months, the industry has added several thousand jobs in the production of solar energy cells and installation of solar panels on roofs. A spate of investment has also aimed at making solar power more efficient and less costly than natural gas and coal.

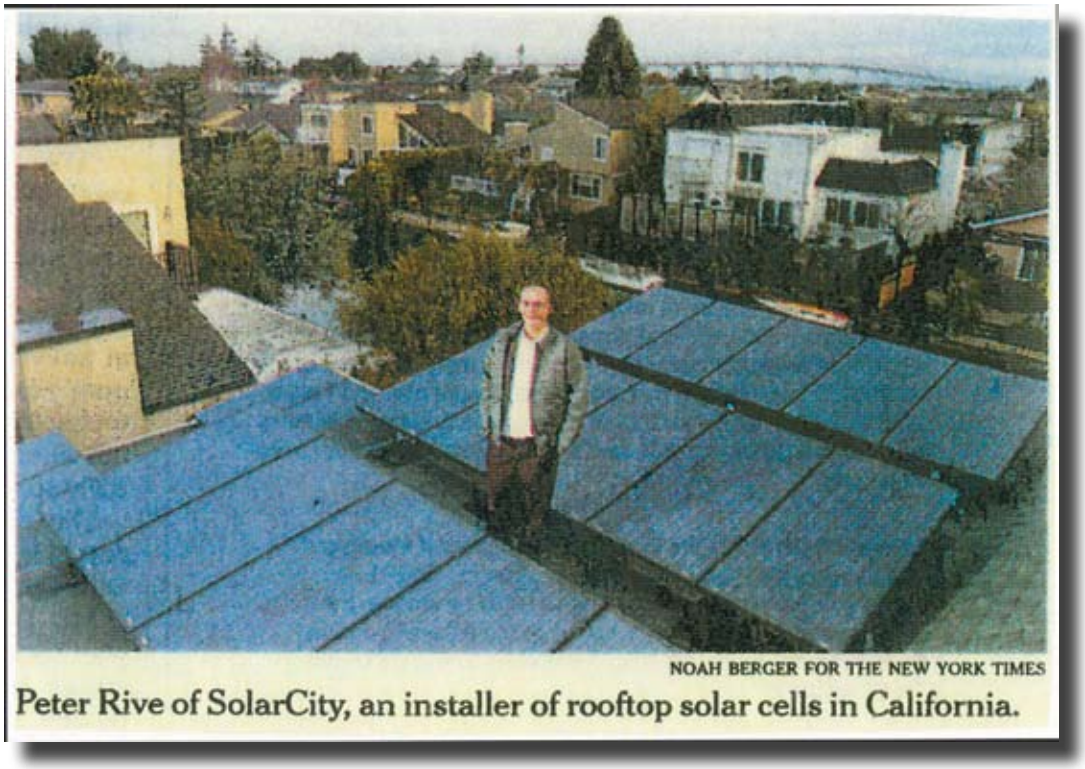
Entrepreneurs, academics and policy makers say this era's solar industry is different from what was tried in the 1970s, when Jerry Brown, then the governor of California, invited derision for envisioning a future fueled by alternative energy.

They point to companies like SolarCity, an installer of rooftop solar cells based in Foster City. Since its founding in 2006, it has grown to 215 workers and $29 million in annual sales. "It is hard to find installers," said Lyndon Rive, the chief executive. "We're at the stage where if we continue to grow at this pace, we won't be able to sustain the growth."

SunPower, which makes the silicon-based cells that turn sunlight into electricity, reported 2007 revenue of more than $775 million, more than triple its 2006 revenue. The company expects sales to top $1 billion this year. SunPower, based in San Jose, said its stock price grew 251 percent in 2007, faster than any other Silicon Valley company, including Apple and Google.

Not coincidentally, three-quarters of the nation's demand for solar comes from residents and companies in California. "There is a real economy — multiple companies, all of

Continued on Page 9



NOAH BERGER FOR THE NEW YORK TIMES

Peter Rive of SolarCity, an installer of rooftop solar cells in California.

New York Times—A Green Energy Industry Takes Root Under the California Sun (continued)

Solar Energy Taking Root in California

From First Business Page

which have the chance to be billion-dollar operators," said Daniel M. Kammen, a professor in the energy and resources group at the University of California, Berkeley. California, he says, is poised to be both the world's next big solar market and its entrepreneurial center.

The question, Professor Kammen says, is: "How can we make sure it's not just green elite or green chic, and make it the basis for the economy?"

There also are huge challenges ahead, not the least of which is the continued dominance of fossil fuels. Solar represents less than one-tenth of 1 percent of the $3 trillion global energy market, leading some critics to suggest that the state is getting ahead of itself, as it did during the 1970s.

The optimists say a crucial difference this time is the participation of private-sector investors and innovators and emerging technologies. Eight of more than a dozen of the nation's companies developing photovoltaic cells are based in California, and seven of those are in Silicon Valley.

Among the companies that academics and entrepreneurs believe could take the industry to a new level is Nanosolar, which recently started making photovoltaic cells in a 200,000-square-foot factory in San Jose. The company said the first 18 months of its capacity has already been booked for sales in Germany.

"They could absolutely transform the market if they make good on even a fraction of their goal for next year," Professor Kammen said. "They're not just a new entrant, but one of the biggest producers in the world."

Many of the California companies are start-ups exploring exotic materials like copper indium gallium selenide, or CIGS, an alternative to the conventional crystalline silicon that is now the dominant technology.

The newcomers hope that CIGS, while less efficient than silicon, can be made far more cheaply than silicon-based cells. Indeed, the Nanosolar factory looks more like a newspaper plant than a chip-making factory. The CIGS material is sprayed onto giant rolls of aluminum foil and then cut into pieces the size of solar panels.

Another example is Integrated Solar, based in Los Angeles, which has developed a low-cost approach to integrating photovoltaic panels directly into the roofs of commercial buildings.

In 2007, 100 megawatts of solar generating capacity was installed in California, about a 50 percent increase over 2006, according to the Solar Energy Industries Association, a trade group.

That growth rate is likely to increase, in part because of ambitious new projects like the 177-megawatt solar thermal plant that Pacific Gas and Electric said last November it would build in San Luis Obispo.

The plant, which will generate power for more than 120,000 homes beginning in 2010, will be built by Ausra, a Palo Alto start-up backed by the investor Vinod Khosla and his former venture capital firm, Kleiner Perkins Caufield & Byers.

The industry in California is also helped by state and local governments' substantial subsidies to stimulate demand. The state has earmarked $3.2 billion to subsidize solar installation, with the goal of putting solar cells on one million rooftops. The state Assembly passed a law to reduce greenhouse gas emissions by 25 percent by 2020, which could spur alternatives like solar.

Additional incentives have come from a small but growing number of municipalities. The city of Berkeley will pay the upfront costs for a resident's solar installation and recoup the money over 20 years through additional property taxes on a resident's home. San Francisco is preparing to adopt its own subsidy that would range from $3,000 for a home installation to as much as $10,000 for a business.

The subsidies have prompted a surge in private investment, led by venture capitalists. In 2007, these seed investors put $654 million in 33 solar-related deals in California, up from $253 million in 16 deals in 2006, according to the Cleantech Group, which tracks investments in alternative energy. California received roughly half of all solar power venture investments made in 2007 in the United States.

"We're just starting to see successful companies come out through the other end of that process," said Nancy C. Floyd, managing director at Nth Power, a venture capital firm that focuses on alternative energy. "And through innovation and volume, prices are coming down."

Whether any of this investment pays off depends, as it did in previous eras, on reaching the point at which solar cells produce electricity as inexpensively as fossil fuels. The cost of solar energy is projected to fall steeply as cheaper new technology reaches economies of scale. Optimists believe that some regions in California could reach that point in half a decade.

At present, solar power is three to five times as expensive as coal, depending on the technology used, said Dan Reicher, director for climate change and energy initiatives at Google.org, the philanthropic division of the Internet company. Among its investments, Google says, is $10 million in financing for eSolar, a company in Pasadena that builds systems that concentrate sunlight from reflecting mirrors.

"We're at the dawn of a revolution that could be as powerful as the Internet revolution," Mr. Reicher said. The problem is, he said, "renewable energy simply costs too much."

At a conference of alternative energy companies in San Francisco last month, to discuss how to encourage the industry's growth, Mr. Brown, the former governor, joked that if the participants wanted to make real headway selling alternative energy, they should try not to come off as flaky. "Don't get too far ahead of yourselves," said Mr. Brown, now the state's attorney general. "You will be stigmatized. Don't use too many big words and make it all sound like yesterday."

Green Builder—California Embraces Solar
August 2008

There's probably no single image in the history of building that's proved a more powerful sales tool than that of an electric meter spinning backward.

Builders report watching buyers stand mesmerized as their meter spins, selling harvested solar power back to the grid. This consumer interest—along with the better-looking solar products and the hefty solar rebates—has spurred a frenzy of activity by solar manufacturers to get products to market.

If you try to figure out which solar system to offer in your homes and which provider to partner with, you'll probably encounter a lot of noise: The solar industry has doubled approximately every two years over the past 10. New companies sprout daily, and options from DIY-type solar in a box to full-service integrators proliferate.

We asked solar experts and manufacturers to simplify things for us, to help us take an average builder through the steps of selecting a solar system. Here is the collective response.

Ready Solar's prefab Solar in a Box line can be used on any structure with an unshaded south-southwest facing roof. As this custom home demonstrates, the solar look has come a long way from clunky panels.

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LA Times—Surprise, it's solar
June 3, 2007

Surprise, it's solar

HEAT SEEKING: The Solar Pathfinder measures sun exposure at different locations.

TWO-TONED TOP: Nikhil Jakatdar and wife Sudnya Shroff, with son Akhil, 6, and daughter Divya, 4, opted for solar tiles on their home in Los Altos, Calif.

Sleeker than panels, sun-soaking roof tiles lie flat. Although costly initially, they pay back for years.

By MICHELLE HOFMANN
Special to The Times

AT first glance, Paul Rupert's Livermore, Calif., home looks like any other residence. But the 2,900-square-foot house has a powerful secret. Last year, Rupert installed a solar energy system that cut his monthly electricity and heating bill from $400 to $25.

Rather than use traditional photovoltaic panels that mount to a rack and are sometimes considered unsightly, Rupert choose integrated solar roof tiles that interlock with his new concrete roof tiles and lie flat. "Most people don't even notice that it's a solar roof," said Rupert, 67, an aerospace systems engineer.

As the state pushes for more solar-produced power and more builders and sellers realize that solar can help move homes and increase their value, a new generation of solar energy systems is taking hold. For homeowners in need of a new roof who want to go solar, this latest design option would cost about 20% to 25% more than traditional solar panels, not including additional roof tile installation, said Aaron Hall, president of El Cajon-based Borrego Solar Systems. Rebates and tax credits, however, return 30% to 40% of the initial solar-system costs to the consumer, according to the California Energy Commission and solar experts such as Mark Conroy, general manager for GE Energy's Solar Technology.

Costs are also recouped in energy savings. Sold by the amount of energy, or [*See Solar, Page K12*]

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watts, they produce, solar power systems send surplus energy to the utility company's power grid and, based on an agreement with the company, provide the homeowner with an energy credit. When the home's energy needs can't keep up with demand, the utility returns that credit to the homeowner.

A 3,000-square-foot home, for example, would need a 3.5- to 4.5-kilowatt system and take up about 100 square feet of roof space per kilowatt.

Rupert hired Borrego Solar to install General Electric's 5-kilowatt integrated tiles. Though designed to work with concrete roof tiles, the lightweight integrated solar electric tiles — which have a blue to black antireflective coating — also will work with composition shingles, Hall said. The solar tiles just need an extra layer of flashing around the edges.

Rupert's rooftop project ultimately cost $65,000. He spent $57,000 for his 5-kilowatt system and $24,000 for the concrete tile roof, but got a state rebate of $14,000 and a federal tax credit of $2,000. By comparison, the average cost to re-roof a 2,500-square-foot roof with asphalt shingle, cement tile, wood or metal runs from $8,000 to more than $20,000.

Since the product is still new compared to panels, Hall said he estimates only 5% of Borrego's residential installations this year will use the solar tiles. He expects that number to double next year.

Real estate agents Tammy Schwolsky, 40, and her husband, Ron, 45, also looked at integrated tiles to complement a total "green" makeover of their 2,450-square-foot Studio City home. But they decided on a $37,000, 4-kilowatt, 36-panel traditional solar electric system capable of producing about 80% of the home's power.

Homes and their energy demands differ, said Bill Glauz, manager of solar energy development for the Los Angeles Department of Water and Power. Therefore, he said, it's important to evaluate solar options in terms of use, potential obstructions—such as shade, chimneys, neighboring trees or that newly acquired satellite dish—and aesthetics.

"Panels on the front of the house might produce optimum performance, but not look as good," Glauz said.

Still, not everyone is shy about harnessing the power of the sun. "A lot of people wear their panels loud and proud," Tammy Schwolsky said.

Pardee Homes and Tim Lewis Communities are among a handful of California home builders offering solar integrated roof tiles in some developments.

Joyce Mason, vice president of marketing for Pardee, said eight San Diego County and two Orange County developments feature GE Energy's roof-integrated solar systems.

"Pardee has been offering solar since 2001, but we are just now starting to see this whole notion of an energy-efficient home and lower energy bills become more of a factor in the buying decision," Mason said.

Builder Tim Lewis agrees. "We think the homes sell faster, but we also think it's the right thing to do," he said. "It's good for the environment, saves the buyer money on energy bills and provides them with a tax credit."

LA Times—Surprise, it's solar
(continued)

There are other benefits to home buyers and sellers too.

"The person who purchases a home with a solar roof knows their electric bill will be lower and so does the bank," Tammy Schwolsky said. "So when a homeowner puts solar panels on their home, they are putting instant equity into their home and making the house more valuable."

How much more valuable?

Green Builder Media and Imre Communications recently reported that home buyers say they are willing to pay a premium of 11% to 25% for green-built homes.

A recent study in the real estate trade publication Appraisal Journal reported that for every utility-bill dollar saved annually because of an improvement, a homeowner gains about $20 in property value. So if solar cuts the annual electric bill by $1,000, the owner could gain $20,000 in home value.

"This is one of the few products that will pay for itself within five or six years and then provide you with a positive cash flow for the remaining life of the system," said Greg Johanson, president of Westlake Village-based Solar Electrical Systems. Manufacturer's warranties on solar systems range from 20 to 25 years.

Johanson's estimated payback time is shorter than the estimate Livermore homeowner Rupert was given.

"Borrego Solar said it would take 10 to 12 years to pay back the roof," Rupert said, "but it looks to me that it will be more like seven years."

Homeowners have been slow to jump on the solar bandwagon, however. L.A.'s DWP has issued fewer than 1,000 solar-roof rebates to residents since 2000. Glauz said the goal is to bring that number to 100,000 solar energy systems in the city by 2010 through incentive funding programs.

Still, no matter how much power a home generates through solar power, the owner shouldn't expect a check from the utility company for any extra production that remains unused at the end of the year.

"Utilities don't financially compensate homeowners for production beyond use," said Claudia Chandler, assistant executive director for the California Energy Commission. "So if you generate more power than you use during the year, that's just a gift to the utility."

"That's why we encourage people to size their systems accordingly," she said. "We don't want people to be so zealous that they oversize and generate more electricity than they need."

With manufacturers and utilities working to make solar options as commonplace as central air-conditioning, Borrego Solar's Hall said he anticipates costs for residential solar tiles will come down slowly.

Homeowners shouldn't worry that the next advancement is just around the corner, however, Hall noted. "I don't anticipate any big technological breakthroughs that will make a consumer feel silly about having gone solar too soon."

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For information on the **New Solar Homes Partnership** or solar incentives for new residential construction visit:

www.GoSolarCalifornia.org

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